

REMARKS

Claims 1-12 are pending in this application. By this Amendment, claims 1, 9 and 10 are amended to further define the subject matter. Support for the amendments to claims 1, 9 and 10 can be found throughout the specification at, for example, page 6, lines 5-10, page 7, lines 20-25 and Fig. 5. Claims 2-8 and 11-12 are amended for antecedence. No new matter is added.

In view of the foregoing amendments and the following remarks, reconsideration and allowance of claims 1-12 are respectfully requested.

Interview

The courtesies extended to Applicant's representative by Examiner Bhat at the interview held November 24, 2009, are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below, which constitute Applicant's record of the interview.

35 U.S.C. §102(e) Rejection

Claims 1-12 were rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Agorio (U.S. Patent No. 6,697,096). Applicants respectfully traverse this rejection.

Claim 1

The method of measurement by scanning of claim 1 requires, among other features, (1) using a scanning device to perform a scan of at least a part of an object located on the sample holder and of at least a portion of a surface of the sample holder to obtain measurement data; (2) using at least a portion of the measurement data from the scan to establish an orientation of a plane of the sample holder and thereby establishing any misalignment or non-colinearity of the sample holder with respect to the rotatable or longitudinal axis; and (3) interpreting at least a portion of the measurement data from the scan using the orientation of the plane of the sample holder in order to correct the measurement

data for any established misalignment or non-colinearity of the sample holder with respect to the rotatable or longitudinal axis. These features of claim 1 provide benefits, such as removing the sources of error due to any misalignment or a non-colinear sample holder. See, for example, page 5, line 17 to page 6, line 2, of the specification.

Agorio does not describe the above features (1)-(3) of claim 1 or the benefits associated therewith. Agorio describes a laser beam pattern generator. See the abstract of Agorio. Although Agorio does describe "scanning," Agorio does not describe a method of measurement by scanning, as further discussed below.

Agorio Does Not Describe Obtaining Measurement Data

Agorio describes that a laser beam source 124 provides a laser beam 128 that travels along a beam path 132 to the substrate 104. See col. 3, lines 46-48 of Agorio. Agorio describes that a laser beam pattern generator 100 comprises a rotating scanner 236 including a plurality of mirror facets 310 for scanning the laser beam 128 across the substrate 104 along scan lines 320 to form a pattern on the substrate 104. See col. 3, lines 64-67 and Fig. 2 of Agorio. The pattern of Agorio is a pattern representative of electronic circuitry, such as a photomask. The patterned photomask would then be developed and stabilized to fix the pattern on the substrate. See col. 3, lines 9-23 of Agorio. In other words, Agorio at best describes forming a pattern on a substrate using a laser, which is not a method of measurement by scanning. To this extent, Agorio does not describe a method of using the laser beam 128 for measurement in any way.

Thus, Agorio does not describe using a scanning device to perform a scan of at least a part of an object located on the sample holder and of at least a portion of a surface of the sample holder to obtain measurement data, as required by claim 1.

Agorio Does Not Describe Establishing An Orientation Of The Sample Holder

The Patent Office alleges that Agorio, at col. 4, lines 12-42, is similar to "...establishing orientation of a plane of the sample holder and thereby establishing misalignment or non-collinearity of the sample holder with respect to the rotatable or longitudinal axis..." as required by claim 1. The Patent Office has misinterpreted the description of Agorio in this respect.

Agorio describes that the rotating scanner 236 can cause periodic errors in the scanning of the laser beam 128 across the substrate 104 due to its rotational motion at the spinning frequency and that the periodic errors have frequencies that are integral multiples of the spinning frequency. See col. 4, lines 12-17 of Agorio. Agorio describes that the rotating scanner 236 may have a wobble, which corresponds to a wobble of the laser beam 128 along a stripe axis 127. See col. 4, lines 21-25 of Agorio. The rotating scanner 236 is not a sample holder, thus even if a wobble due to misalignment of the rotating scanner were determined, Agorio does not establish misalignment or non-collinearity of the sample holder, as required by claim 1. Agorio describes a separate substrate support 108 that supports the substrate 104 for patterning. See col. 3, lines 28-29 of Agorio.

Agorio describes that to determine the scanning error, the laser beam 128 is scanned across a reticle having a slit or reflective line in the longitudinal direction. Agorio describes that a laser beam detector 235 detects the intensity of the laser beam 128 emerging from the slit to determine the positional error of the laser beam. See col. 4, line 59 to col. 5, line 2 of Agorio. Agorio describes that to compensate for errors in the scanning of the laser beam 128 arising from the rotating scanner 236, a rotating scanner compensator 390 deflects the laser beam 128. See col. 5, lines 3-23 of Agorio.

Clearly, detecting an intensity of the laser beam 128 emerging from a slit and using a rotating scanner compensator to deflect a laser beam is very different from scanning at least a

part of an object located on the sample holder and of at least a portion of a surface of the sample holder to obtain measurement data, establishing an orientation of a plane of the sample holder and thereby establishing misalignment or non-colinearity of the sample holder with respect to the rotatable or longitudinal axis, as required by claim 1.

Agorio also describes that separately from the laser beam, there may be a fiducial mark locator 248 to measure actual locations of fiducial marks 252 of the substrate. Agorio describes that the fiducial mark locator, such as a camera, monitors a change in the light transmitted through, or reflected from, the substrate 104 to determine the locations of the fiducial marks 252 of the substrate 104. See col. 5, lines 54-67 and col. 6, lines 17-23 of Agorio. However, the fiducial marks are located on the substrate 104 (not on the sample holder) and also are not used in any way to establish an orientation of a plane of a sample holder, as required by claim 1. Further, the fiducial mark locator 248 is separate from the laser beam 128.

Agorio also describes a support motor 112 that controls the motion of the substrate support 108 to scale, rotate or translate a pattern projected onto the substrate 104 by the laser beam 128. See col. 6, lines 34-38. Agorio describes that support position sensors 116 are provided that determine the position of the substrate 104 and the substrate support 108 for controlling the movement of the support motor 112. See col. 3, lines 29-43. However, these support position sensors are also separate from the scanning laser beam 128.

In other words, Agorio describes a fiducial mark locator and support position sensors that are both separate from the scanning laser beam 128. Thus, Agorio does not describe using the scanning device to perform a scan of at least a part of an object located on the sample holder and of at least a portion of a surface of the sample holder to obtain measurement data and using at least a portion of the measurement data from the scan to establish an orientation of a plane of the sample holder and thereby establishing any

misalignment or non-colinearity of the sample holder with respect to the rotatable or longitudinal axis, as required by claim 1.

Agorio Does Not Describe Interpreting At
Least A Portion Of The Measurement Data From The Scan

As discussed above, Agorio does not describe (1) using a scanning device to perform a scan of at least a part of an object located on the sample holder and of at least a portion of a surface of the sample holder to obtain measurement data; and (2) using at least a portion of the measurement data from the scan to establish an orientation of a plane of the sample holder and thereby establishing any misalignment or non-colinearity of the sample holder with respect to the rotatable or longitudinal axis, as required by claim 1.

Thus, because Agorio does not describe above features (1) and (2) of claim 1, Agorio also cannot describe (3) interpreting at least a portion of the measurement data from the scan using the orientation of the plane of the sample holder in order to correct the measurement data for any established misalignment or non-colinearity of the sample holder with respect to the rotatable or longitudinal axis.

Claims 9 And 10

Similar to the above features (1)-(3) of claim 1, claim 9 requires, among other features, performing a datum scan with the scanning device to obtain measurement data for establishing any misalignment or non-colinearity of the sample holder with respect to the rotatable or longitudinal axis; performing a sample scan with the scanning device of a sample to obtain measurement data of the sample; and interpreting the measurement data of the sample from the sample scan using any established misalignment or non-colinearity data obtained from the datum scan in order to correct the measurement data of the sample for any established misalignment or non-colinearity of the sample holder.

Similar to the above features (1)-(3) of claim 1, claim 10 requires, among other features, performing a datum scan with the scanning device to obtain measurement data for establishing any misalignment or non-colinearity of the sample holder with respect to the rotatable or longitudinal axis; performing a sample scan with the scanning device of a sample to obtain measurement data of the sample; and interpreting data from the sample scan using any established misalignment or non-colinearity data from the datum scan in order to correct the measurement data of the sample for any established misalignment or non-colinearity of the sample holder.

For at least those reasons presented above regarding claim 1, Agorio also does not describe the above features of claims 9 and 10.

Claims 2-8 And 11-12

Claims 2-8 and 11 depend from claim 1 and claim 12 depends from claim 9. For at least their respective dependency, and for the additional features recited, Agorio also does not anticipate claims 2-8 and 11-12.

Conclusion

For at least the above reasons, Agorio does not describe all of the features of claims 1-12. Withdrawal of the rejection is respectfully requested.

35 U.S.C. §103(a) Rejection

Claim 4 was rejected as allegedly having been obvious over Agorio. Applicants respectfully traverse this rejection.

Claim 4 depends from claim 1. Thus, as above, Agorio does not describe, or provide any reason or rationale for one of ordinary skill in the art to have come to, at least above features (1)-(3) of claim 1. For at least its dependency, and for the additional features recited, Agorio would not have rendered obvious claim 4.

Withdrawal of the rejection is respectfully requested.

Concluding Remarks

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-12 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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